

The applicability of a multitask boxing program using the BoxMaster® for Parkinson's disease.

Josefa Domingos^{1,2}, Rita Loureiro¹, Catarina Godinho^{1,2,3}, John Dean MA CCC-SLP⁴, Joaquim J. Ferreira^{1,2}

¹CNS-Campus Neurológico Sénior, Lisbon Portugal; ²Laboratory of Clinical Pharmacology and Therapeutics, Faculty of Medicine, University of Lisbon, Portugal. ³Center for Interdisciplinary Research Egas Moniz (CiEM), Instituto Superior de Ciências da Saúde Egas Moniz, Monte de Caparica, Portugal; ⁴Davis Phinney Foundation, USA.

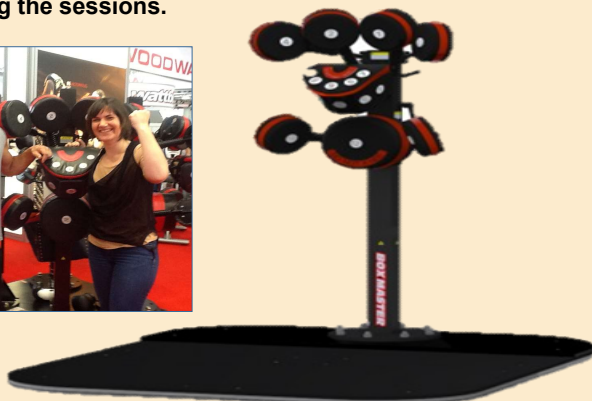
BACKGROUND

There is growing evidence for the positive benefits of physiotherapy and cognitive training or even their combination in dual or multitask training programs. This evidence is now being translated into PD-specific community programs, such as boxing. Yet, translating this nontraditional modality of exercise into a Multitask Parkinson-specific community approach is still a challenge for health professionals since it requires high-level multitasking training that is in urgent need of research and may require severe safety measures since it is both physically and cognitively challenging.

OBJECTIVE & METHODS

To test **the applicability of a multitasking boxing program using the BoxMaster® in individuals with Parkinson's disease** that combines motor, cognitive and vocal exercises.

The Multitask BoxMaster® program consisted of PD-specific physical, cognitive and voice exercise sessions using boxing activities. The program was conducted by physiotherapist specialized in PD and was done using the BoxMaster® boxing equipment (from Core Health & Fitness, LLC; and GIMNICA, Lda) that has boxing punching pads identified with numbers, placed in an adjustable tower with specific angles that allow any combination of punching sequences and adding functional activities relevant to PD (sitting, standing, walking, turning). **Applicability was assessed based on patient satisfaction and any types of problems that arose during the sessions.**

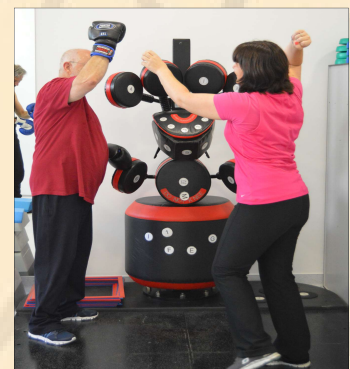


RESULTS

Eight participants were included, with a diagnose of PD, medically stable, Hoehn & Yahr I-III, with mean age of 68 years and who could ambulate independently. Twelve individual sessions were done during 3 months, once per week. During the sessions, modifications to the exercises included adjustments to the type of cognitive, voice and physical activities applied into the boxing sequences, length, use of verbal feedback, time for learning, among others.

Patients referred that using the BoxMaster® made learning the boxing sequences easier because of the numbers placed on the boxing pads. At initiation of practice, the typical signs associated with PD became evident, such as bradykinesia and reduced synchronization between the force applied of both limbs and required continuously correction the by therapist with verbal and non-verbal cues. Additionally, when required to perform dual tasks or divide attention between tasks, the lack of sufficient attentional resources seen in people with PD usually resulted in the decrement of the motor concurrent tasks and placed participants at risk of falling. Thus, risk of falling and correct posture also had to be monitored and corrected continuously.

Yet, all participants completed the study with **no adverse events** or any disease-related problems during the sessions. A satisfaction questionnaire at the end of each session showed **participants enjoyed themselves, were satisfied with the intensity and duration of the exercises.**



CONCLUSION

Our results suggest that using the BoxMaster® with the selected combination of physical, cognitive and voice exercises was **acceptable to people with PD** and facilitated patients leaning capacities. **Safety precautions** are needed when doing dual task training.